AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Amendments shown by strikethrough (for deleted matter) or underlining (for added matter).

1. (previously presented): A thickness shear mode piezoelectric resonator for use in a sensor arrangement for detecting or measuring an analyte in a medium, comprising:
a quartz crystal plate having a first crystal surface and a second crystal surface, wherein
said first crystal surface comprises a first electrode having a surface area of less than 15 mm^2;
said second crystal surface comprises a second electrode.

2. (previously presented): The resonator of claim 1, wherein the surface area of the first electrode is less than 10 mm^2.

3. (previously presented): The resonator according to claim 1, wherein the surface area of the first electrode is at least 0.05 mm^2.

4. (previously presented): The resonator according to claim 1, wherein the surface area of the first electrode is smaller than the first crystal surface.

5. (previously presented): The resonator according to claim 1, wherein the distance from the sensing electrode edge to the crystal edge is at least 0.2 mm.

6. (previously presented): The resonator according to claim 1, wherein the first electrode has a rectangular-shaped surface, having a first side and a second side

7. (previously presented): The resonator according to claim 1, wherein the first side is at least 0.1-10 times as long as the second side.

8. (previously presented): The resonator according to claim 1, wherein
the first crystal surface is provided with a first contacting area connected to the first electrode; and
the second crystal surface is provided with a second contacting area connected to the second electrode.

9. (previously presented): The resonator of claim 8, wherein
the first electrode has a first side and a second side; and
the first contacting area is connected to the second side of the first electrode.

10. (previously presented): The resonator according to claim 1, wherein the first crystal surface and the second crystal surface are flat.

11. (previously presented): The resonator according to claim 1 , wherein the quartz crystal is an inverted mesa.

12. (previously presented): The resonator of claim 11, wherein
the quartz crystal plate comprises a first recess having a wall and a bottom surface and a first electrode in the first recess;
the area of the bottom surface is larger than the first electrode; and
the first electrode is arranged in the recess such that there is a distance between the electrode and the recess wall.

13. (previously presented): The resonator of claim 11, wherein the shortest distance from the electrode to the recess wall is at least 0.01 mm.

14.-22. (cancelled)

23. (previously presented): A method of sensing or measuring; comprising using a thickness shear mode resonator according to claim 1 to sense or measure

24. (previously presented): The method according to claim 23, wherein the resonator is used to sense or measure of liquid samples.

25. (previously presented): The resonator according to claim 1, wherein the surface area of the first electrode is 1-5 mm^2.

26. (previously presented): The resonator according to claim 4, wherein the first electrode has a surface area that is 0.1-90% of the crystal area.

27. (previously presented): The resonator according to claim 5, wherein the distance from the sensing electrode edge to the crystal edge is at least 1 mm.

28. (previously presented): The resonator according to claim 27, wherein the distance from the sensing electrode edge to the crystal edge is at least 2 mm.

29. (new): The use of the resonator according to claim 1 in a flow cell for use in an apparatus for detecting or measuring an analyte in a medium, comprising : a sensing chamber comprised of walls;
and
inlet and outlet openings for leading a fluid through the sensing chamber, wherein one of the walls of the sensing chamber consists of a part of the resonator; and
the first electrode of the resonator is inside the sensing chamber.

30. (new): The use of claim 29, wherein a cross sectional area of the sensing chamber perpendicular to a flow direction is less than 2,5 times a cross sectional area of the inlet and outlet openings.

31. (new): The use of claim 30, wherein the cross sectional area of the sensing chamber perpendicular to the flow direction is the same as the cross sectional area of the inlet and outlet openings.

32. (new): The use according to claim 29, wherein the sensing chamber has a volume of less than 2 µl.

33. (new): The use according to claim 29, wherein
the flow cell comprises a flow cell element;
the flow cell element includes an outwardly open recess;
the outwardly open recess has a bottom surface and walls the bottom surface and walls constitute the walls of the sensing chamber not constituted by the resonator ;
the resonator is a replaceable part ; and
the resonator is held against the flow cell element by a pressing force to cover the recess and form the flow cell.

34. (new): The use according to claim 29, wherein
the flow cell comprises a flow cell element;
the flow cell element includes an outwardly open recess;
the outwardly open recess has a bottom surface and walls the bottom surface and walls constitute the walls of the sensing chamber not constituted by the resonator and
the resonator is attached to the flow cell element by an adhesive to cover the recess and form the flow cell.

35. (new): The use according to claim 33, wherein
the flow cell element comprises a contact surface ~~(36),~~ against which the resonator is to be held
the contact surface is plane-parallel to the bottom surface of the outwardly open recess and encircles the recess; and
the recess has a geometrical shape that corresponds to a geometry of the first electrode.

36. (new): The use according to claim 33, wherein the shortest distance from the electrode to the recess walls is at least 0.01 mm.

37. (new): The use of claim 29, wherein the flow cell is used in a sensor arrangement for detecting or measuring an analyte in a medium.